**P21Z PROGRAMMABLE TRANSDUCER OF AC CURRENT, AC VOLTAGE AND FREQUENCY**

**Features:**
- Continuous conversion of AC current, AC voltage without DC component and frequency.
- Standard DC current or DC voltage output signal or RS-485 interface with Modbus protocol.
- Compact dimensions.
- 0.2 accuracy class.
- Fully programmable parameters by PD14 programmer and free e-Con program:
  - measurement averaging time,
  - conversion characteristic,
  - preservation of the output signal at overflows,
  - RS-485 transmission parameters.

**Inputs:**
- AC

**Outputs:**
- 0..10 V
- 0..20 mA
- 4...20 mA
- RS 485

**Galvanic Isolation:**

**Examples of Application**
Measured data are transmitted to the recorder/data logger.

**Outputs**

<table>
<thead>
<tr>
<th>Measuring ranges</th>
<th>Parameters</th>
<th>Overloads</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>0...1...100...130 V a.c.</td>
<td>input resistance &gt; 2 MΩ</td>
<td>Short duration overload (1s): 2 Un (&lt; 1000V), 10 In</td>
<td>Basic error (at manufacturer’s settings): ± (0.2% of range)</td>
</tr>
<tr>
<td>0...2.5...250...325 V a.c.</td>
<td></td>
<td>Sustained overload: 150% Un (only for Un = 400 V and ±400 V), 120% Un (for other Un), 120% In</td>
<td></td>
</tr>
<tr>
<td>0...4...400...600 V a.c.</td>
<td></td>
<td></td>
<td>Additional error from ambient temperature changes: ± (50% of the basic error/10K)</td>
</tr>
<tr>
<td>0...0.01...1.0...1.3 A a.c.</td>
<td>input resistance 10 mΩ ±10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0...0.05...5.0...6.3 A a.c.</td>
<td>input resistance 2 mΩ ±10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20...500 Hz (in voltage range 24...480)</td>
<td>input resistance &gt; 2 MΩ</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Outputs**

<table>
<thead>
<tr>
<th>Output kind</th>
<th>Properties</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0...20...22 mA</td>
<td>$R_{\text{load}} \leq 250 , \Omega$</td>
<td>Resolution: 0.01% of the range</td>
</tr>
<tr>
<td>4...20...22 mA</td>
<td>$R_{\text{load}} \geq 500 , \Omega$</td>
<td></td>
</tr>
<tr>
<td>0...10...11 V</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Digital Interface**

<table>
<thead>
<tr>
<th>Interface type</th>
<th>Transmission protocol</th>
<th>Modes</th>
<th>Baud rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS-485</td>
<td>MODBUS RTU</td>
<td>8N2, 8E1, 8O1, 8N1</td>
<td>4.8, 9.6, 19.2 kbit/s</td>
</tr>
</tbody>
</table>
**EXTERNAL FEATURES**

- **Weight**: < 0.125 kg
- **Dimensions**: 22.5 x 120 x 100 mm
- **Protection grade (acc. to EN 60529)**: ensured by the housing: IP 40 from the terminal side: IP 20
- **Fixing**: on a 35 mm rail acc. to EN 60715

**RATED OPERATING CONDITIONS**

- **Supply**: 85...253 V a.c. 40...400 Hz; 90...300 V d.c.
  20...40 V a.c. 40...400 Hz; 20...60 V d.c.
  Power consumption: < 3 VA
- **Temperature**: ambient: -20...23...60˚C
  Storage: -25...85˚C
- **Relative humidity**: < 95%
  Inadmissible vapour condensation
- **Operating position**: any
- **Preheating time**: 15 min
- **Averaging time of the measurement**: ≥ 0.5 s
  1 second set by default

**SAFETY AND COMPATIBILITY REQUIREMENTS**

- **Electromagnetic compatibility**: Noise immunity acc. to EN 61000-6-2
  Noise emissions acc. to EN 61000-6-4
- **Isolation between circuits**: basic
- **Pollution grade**: 2
- **Installation category**: III (for the 400 V option - category II)
  acc. to EN 61010-1
- **Maximal phase-to-earth operating voltage**:
  - for the supply circuit: 300 V
  - for the measuring input: 600 V cat. II (300 V - cat. III)
  - for the programming input: 50 V
  - for the output: 50 V
- **Altitude above sea level**: < 2000 m

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**ORDERING**

**ORDERING CODES:**

<table>
<thead>
<tr>
<th>P21Z</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>XX</th>
<th>X</th>
</tr>
</thead>
</table>

**Input Signal:**

- 100 V a.c. 1
- 250 V a.c. 2
- 400 V a.c. 3
- 1 A a.c. 4
- 5 A a.c. 5
- Frequency 20...500 Hz 6

**Output:**

- 0...20 mA 1
- 4...20 mA 2
- 0...10 V 3
- RS-485 4

**Supply:**

- 85...253 V a.c. 40...400 Hz; 90...300 V d.c. 1
- 20...40 V a.c. 40...400 Hz; 20...60 V d.c. 2

**Version:**

- Standard 00
- Non-standard settings 5
- Custom-made* 2

**Language:**

- Polish 0
- English E
- Other* X

**Acceptance tests:**

- Without extra quality inspection requirements 0
- With an extra quality inspection certificate 1
- Acc. to customer's request X

* - after agreeing with the manufacturer

**Order Example:**

The code P21Z - 1 1 0 0 E 0 means:

- P21Z - transducer of a.c. current or a.c. voltage signals
- 1 - input signal: 1...100 V a.c.
- 1 - output signal: 0...20 mA 1
- 0 - supply voltage: 85...253 V a.c. 40...400 Hz; 90...300 V d.c.
- 00 - standard version
- E - English language
- 0 - without extra quality inspection requirements

For more information about LUMEL's products please visit our website: www.lumel.com.pl

**Fig. 1. Electrical connections of P21Z transducer: analog output and supply.**

**Fig. 2. Electrical connections of P21Z transducer inputs.**